
CLAIM + DETAILED DESCRIPTION

[Claim(s)]
[Claim 1]
Artificial hair characterized by being made from a PTT (polytrimethylene terphthalate) filament.
[Claim 2]
It is the lusterless method of artificial hair made from a PTT (polytrimethylene terphthalate) filament,
The lusterless method of the artificial hair characterized by mixing and carrying out alkali treatment of both silica and sulfuric acid BARYUMU to said PTT filament as a filler.
[Claim 3]
The mixing rate of said silica to said PTT filament is the lusterless method of the artificial hair according to claim 2 characterized by the mixing rates of said sulfuric acid BARYUMU being 0.2-0.8 0.3 to 1.2%.

[Detailed Description of the Invention]
[0001]
[Field of the Invention]
This invention relates to the artificial hair which maintains curl nature, and its lusterless method, even if it has the aesthetic property of natural human hair and approximation of the appearance after dyeing, and quality and time passes.
[0002]
[Description of the Prior Art]
Conventionally, the filament of various synthetic fibers is used as artificial hair used for a wig, a hair wig, etc. And as a material of such a synthetic fiber filament for artificial hair, vinyl chloride, modacryl, polyester, nylon, etc. are used widely.
[0003]
By the way, if the wig using artificial hair is worn and everyday life is carried out, depending on the material used for artificial hair, artificial hair will mainly concern, and a curl will occur in hair ends etc. Thus, if a curl occurs, the outlook on nature of artificial hair is spoiled remarkably, and the fault that it will become clear that it is a wig will arise at a glance. Therefore, the wearer of the wig was correcting conventionally artificial hair frizzled periodically.

[0004]
However, various difficulties are accompanied by the work which corrects the once frizzled artificial hair. For example, there is a wig which cannot be detached and attached easily and the wearer of such a wig that cannot be detached and attached is increasing in recent years from the former especially. Such a wig is fixing the wig to self-hair, i.e., a head, by connecting self-hair to the edge of the base network of a wig, and hardening the knot with medical application adhesives further. Therefore, since it is the wig currently fixed firmly in this way, the wearer cannot remove a wig by himself.
[0005]
On the other hand, in usual, self-hair is extended, and when the overall balance with self-hair and a wig became unnatural, a curl which was mentioned above has occurred to artificial hair. Therefore, it is necessary to correct this curl. [the wig which cannot perform mainstream attachment and detachment in recent years] although what is necessary is to see a chip box and just to restore the curl of a wig which equipped with, exchanged and removed the spare wig, if a wig is an attachment-and-detachment type I visit a special hair salon and have a wig removed, and after restoring the curled wig of artificial hair, the procedure of having hairdressing of the whole head carried out is needed.
[0006]
But it is in that there is material which a curl does not generate easily like for example, a nylon filament when it is made artificial hair in inside. However, even if it thinks that it wants to hang curl afterwards according to the special feature which nylon has once it prepares the artificial hair of a nylon filament in the form of a request at the time of factory shipments by heat treatment etc., the once formed form cannot be changed.
[0007]
Moreover, since vinyl chloride and modacryl as well as nylon have the special feature that curl nature is not good, the rate used as an object for the straight hair wigs for people who rather dislike the frizzled hair of self-hair which does not have the necessity of processing curl etc. afterwards, on the contrary is very high.
[0008]
Moreover, although there is a fault that a polyester filament is frizzled comparatively easily compared with other materials, since it is rigid as characteristics of polyester, when it makes for a wig, it has the strong point of being easy to form a massive hairstyle.
[0009]
[The patent documents 1]
JP,2002-161423,A (a summary, drawing 1)
[0010]
[Problem to be solved by the invention]
By the way, like the above-mentioned nylon filament, after factory shipments, if it cannot change into arbitrary hairstyles by the wearer of a wig and will say, it cannot be denied that it is that in which the favorite freedom over a hairstyle is lost and big dissatisfaction remains. Moreover, since a nylon filament has low rigidity, the worn wig becomes a cat hair easily and the problem that the hairstyle which has massive [of fashion] among young men cannot be formed in recent years also has it.
[0011]
[moreover, vinyl chloride or a modacrylic filament] Since it has the special feature that

these materials decompose or deteriorate easily with high temperature, even if a curl occurs according to aging in use which was mentioned above, high temperature cannot be used for a wig because of restoration of the curl, but it is made throwing away when it is many. Therefore, it has the problem that there is much futility.
[0012]
On the other hand, since it will become the **** appearance which transplanted hair in wire completely if it forms in the size near human hair and a wig is created now to because of the rigid one, a polyester filament cannot be formed not much thickly. Since sizes with self-hair differed if it cannot form thickly, it had the problem that the balance with an exterior and self-hair became unnatural.
[0013]
anyway, for the once generated curl restoration At the wig of the fixed mount type which cannot be detached and attached in particular easily, while visiting a special hair salon and restoring a curl each time I not only having it only carried out to recarry out wearing of a wig, but, the wearer needs to be waiting and this waiting time could not be disregarded [dissatisfied / which remains].
[0014]
In addition, the applicant of this invention is applying for the mixture of polybutylene terephthalate and polyethylene terephthalate about the artificial hair which changes as a material as new artificial hair which can solve the fault in the above-mentioned conventional artificial hair (refer to patent documents 1.).
[0015]
In view of the above-mentioned conventional actual condition, the technical problem of this invention [the difficulty of being frizzled after the appearance after dyeing, quality, and time progress] It is offering the artificial hair which has the aesthetic property of natural human hair and approximation still better than the artificial hair which changes considering the mixture of polybutylene terephthalate and polyethylene terephthalate as a material, and its lusterless method.
[0016]
[Means for solving problem]
Below, the composition of the artificial hair concerning this invention and its lusterless method is described.
First, the artificial hair of invention according to claim 1 is constituted considering a PTT (polytrimethylene terphthalate) filament as a material.
[0017]
[next, the lusterless method of the artificial hair invention according to claim 2] It is the lusterless method of artificial hair made from a PTT (polytrimethylene terphthalate) filament, and it has the process which mixes and carries out alkali treatment of both silica and sulfuric acid BARYUMU to the above-mentioned PTT filament as a filler, and is constituted.
[0018]
And as for the mixing rate of the above-mentioned silica according to claim 3 of as opposed to [like] the above-mentioned PTT filament, the mixing rate of above-mentioned sulfuric acid BARYUMU consists of lusterless methods of this artificial hair 0.3 to 1.2%, for example so that it may be 0.2-0.8.
[0019]

[Mode for carrying out the invention]
The form of operation of this invention is explained hereafter, referring to Drawings.
PTT (polytrimethylene terphthalate) attracts attention noting that there is fibroid [which combines the form stability of PET (polyethylene terephthalate) and the softness of nylon] in recent years. Although this PTT uses propanediol as a main raw material and it is generated from this propanediol and terephthalic acid Propanediol can be manufactured by a chemosynthesis method, and also it can be manufactured with biotechnology (bacterial coupling) from corn, and attracts attention also as environment-friendly fiber from this.
[0020]
Besides the thing that this PTT has fibroid [which has the form stability of PET and the softness of nylon which a color for exclusive use was not yet made, but mentioned above like other synthetic fibers], it is not yet known that it is clear about the characteristics as the object for garments and other fiber.
[0021]
PBT (polybutylene terephthalate) and PET which are the material of artificial hair looked at from these people by the technology (refer to patent documents 1) already in which it has applied, as a thing with the character in which the inventor of the invention in this application excelled the conventional artificial hair as artificial hair with this PTT paying attention to this PTT, And about the nylon 6 mainly used as artificial hair from the former, various kinds of examinations were done and these physical properties were compared. In addition, about Nylon 66, since it has the almost same physical properties as nylon 6, explanation and illustration are omitted here.
[0022]
Drawing 1 is above PET, PTT, PBT, and the graph showing various kinds of test results about the filament of nylon 6. The synthetic resin filament characteristics graph 1 to the various examinations shown in this figure shows [an examination item] and shows the test result about each above-mentioned examination item continuously to the left end in order of PET, PTT, PBT, and nylon 6 to the method of the right.
[0023]
The examination item serves as glass transition temperature (degree C), a fusing point (degree C), a density (g/cm^3), hardness (g/d), an elastic modulus (kg/mm^2), 10% (%) and elastic recovery, 20% elastic recovery (%), and dyeing temperature (degree C), as shown below from on at the left end of this graph. In addition, since the color only for full-scale PTT was not yet developed, the color used for dyeing chose and used the color usable in common for PET, PBT, and nylon 6.
[0024]
In the examination item shown in this figure, if glass transition temperature (degree C) is the characteristics related to the curl maintenance nature at the time of making the above-mentioned synthetic resin filament into artificial hair and this temperature is too low, it will only hit the open air with strong atmospheric temperature, such as midsummer, and Nikko, and the maintenance nature of curl of artificial hair will fall or disappear.
[0025]
Therefore, in terms of this curl maintenance nature, the glass transition temperature of PBT is 25 degrees C, and it turns out that PBT is what should be excepted in these four kinds. And it turns out that other PET(s), PTT, and nylon 6 are what should be satisfied.

[0026]
Moreover, about the fusing point of an examination item, a density, and hardness, there is no great difference to the extent that each is conspicuous, therefore it cannot pick one over the other from these test results.
Moreover, the elastic modulus and elastic recovery of an examination item are the characteristics related to the style nature at the time of making these synthetic resin filaments into artificial hair. The character which the implanted artificial hair stands easily upwards as for style nature, and cannot go to sleep very much easily horizontally, that is, cannot become a cat hair easily is shown, and if an elastic modulus and elastic recovery are large, it can be said that style nature is good.
[0027]
Therefore, when it sees only from a point of this style nature, the elastic modulus of PET is very as large as 1000 to 1400 kg/mm^2, but the elastic recovery of another side is the lowest, therefore it turns out that it is what should be excepted in these four kinds. And it turns out that both the elastic moduli and elastic recovery of PTT are good [else] in three kinds which remain also including PBT which shall be excepted first. It becomes clear that especially 20% elastic recovery is good for special, and PTT is exceptionally good in terms of style nature.
[0028]
Moreover, elastic recovery being not only low as compared with PTT but the elastic modulus of nylon 6 is the smallest. This has endorsed that the artificial hair formed by nylon 6 becomes a cat hair easily conventionally. Therefore, it turns out that nylon 6 is also what should be excepted in terms of style nature like PET.
[0029]
And the dyeing temperature of an examination item is the characteristics concerning the difficulty of dyeing. Dyeing becomes easy, so that dyeing is so difficult that dyeing temperature is high and dyeing temperature is low. If it sees by the examination item of the dyeing temperature of this figure, the dyeing temperature of PET is the highest and low in order of PBT, PTT, and nylon 6. The 100 to 110 degree C dyeing temperature of PTT is the temperature near the boiling point of water, and is the temperature which ** can also dye easily without a high pressure cooker. Moreover, although the dyeing temperature of nylon 6 is lower than PTT, even if dyeing in a low temperature tends to be decolored easily and it sees it from which point, it can be concluded that PTT is excellent in the difficulty nature of dyeing.
[0030]
As mentioned above, it becomes clear that the physical properties of a PTT filament are excellent as a material of artificial hair also in respect of any of curl maintenance nature, style nature, and the difficulty nature of dyeing putting together.
[0031]
Next, in the PTT filament which has the characteristics which were excellent as artificial hair as mentioned above, as a next stage, in order to make the appearance look like natural human hair, it is necessary to give proper grinding further.
[0032]
Usually, when the above synthetic resin filaments frost the surface as artificial hair, they perform etching by an alkaline water solution. However, generally the synthetic resin filament has the characteristics that resistance is strong, in etching by an alkaline water

solution. And a PTT resin filament is not the exception, either.
[0033]
Drawing 2 is the graph showing the change in physical properties at the time of carrying out alkali treatment of the fiber of PTT100% of 100dx24 filament. The alkali treatment characteristics variation diagram table 2 shown in this figure shows alkali treatment time, a loss-in-quantity rate, contraction after loss in quantity, and strong ductility (hardness, ductility) from the left to the right. Moreover, the state in case a state and alkali treatment time in case a state in case a state in case the state at the time of raw thread and alkali treatment time are 1 hour, and alkali treatment time are 2 hours, and alkali treatment time are 3 hours are 4 hours is shown from a top to the bottom, respectively.
[0034]
Although it responds for alkali treatment time to become long one by one from 1 hour for 4 hours and the loss-in-quantity rate becomes large one by one with 7%, 16%, 26%, and 34%, each contraction after loss in quantity is 6.7%, and does not have a difference.
[0035]
Moreover, although a loss-in-quantity rate responds for becoming large and hardness is falling from the hardness of 246.1g at the time of raw thread to the hardness of 158.8g in case alkali treatment time is 4 hours, corresponding [that is,] to the length of alkali treatment time, it has the hardness as artificial hair enough.
[0036]
Moreover, ductility has all in 54.4% - 58.2% of inside to 41.0% of the ductility at the time of raw thread, it is almost unrelated to the length, i.e., the loss-in-quantity rate, of alkali treatment time, and elongation has stopped at the fixed place. This can also be called desirable characteristics desired as artificial hair.
[0037]
Although the sizes of a loss-in-quantity rate are the physical properties related to the lusterless grade of raw thread here, only by raw thread having only become thin and becoming thin by alkali treatment, it does not become lusterless but moderate unevenness (henceforth a crater) must be formed in the surface. Moreover, efficiency goes up and is uneconomical even if it will take alkali treatment time too much, by the time it will be in a proper lusterless state. However, as shown in the graph of drawing 2 , PTT resin has resistance strong against etching by an alkaline water solution.
[0038]
By the way, generally the filament fiber of a synthetic resin is related with etching such for being lusterless at the point that resistance is strong. When fusing the synthetic resin at the time of spinning as fiber, it is known by adding a proper inorganic filler that it will be solvable by supporting etching.
[0039]
Then, the lusterless examination by etching was repeated, adjusting the loadings about various kinds of inorganic fillers in order to perform optimal etching by the alkali treatment to the PTT filament which has not been performed yet.
[0040]
Generally, if grinding goes too far, it will become perfect opacity, and the tone after dyeing becomes vivid too much, and it looks unnaturally. Moreover, when a lusterless grade is low, a transparent feeling is added to the tone after dyeing, and this also looks unnatural. Therefore, delicate adjustment is needed for grinding of artificial hair.

[0041]
If the inorganic filler used for this lusterless examination is crossed to the variety and it lists, it is as follows. That is, they are a talc, calcium carbonate, mica, titanium oxide, zinc oxide, kaolin, alumina, barium sulfate, zinc sulfide, zinc white, phosphoric acid manganese, zeolite, silica, etc.
[0042]
Using these inorganic fillers, variously, by various methods, the lusterless examination was repeated and was done. For example, titanium oxide, barium sulfate, zeolite, and silica were mixed 1% at the time of PTT filament spinning, respectively, and the grade of the loss in quantity by alkali treatment, i.e., formation of a crater, was verified. As a result, as a state of the gloss considered to be the optimal when it is considered as artificial hair, the effect was seen in order of silica, zeolite, barium sulfate, and titanium oxide.
[0043]
Incidentally, in silica, the loss-in-quantity rate at this time was 20% in zeolite, was 35% in barium sulfate, and was 35% 20% at titanium oxide, respectively. Moreover, the opacity of the filament had the most expensive zeolite and fell one by one in order of silica, titanium oxide, and barium sulfate. That is, it approached transparently.
[0044]
Here, it decided to examine further by changing the mixing rate of the inorganic filler mixed at the time of spinning. However, even when the result of having mixed silica 2% was seen and the gloss considered to be the optimal as silica at 10% of a loss-in-quantity rate was obtained, it became opaque too much, the tone after dyeing became heavy, and the tendency to differ from the tone of people's natural hair was seen.
[0045]
Moreover, even when the result of having mixed sulfuric acid BARYUMU 2% was seen and the gloss considered to be the optimal as sulfuric acid BARYUMU at 25% of a loss-in-quantity rate was obtained, it became near too much transparently this time, and the tendency for the tone after dyeing to be too light and to differ from the tone of people's natural hair also in this case was seen.
[0046]
Then, an inorganic filler does not use only one kind but two kinds of inorganic fillers, silica and barium sulfate, from which the respectively as it is comparatively good result is obtained by the above-mentioned examination are used together. the tone which has the optimal opacity after the gloss optimal as artificial hair, and dyeing by frosting a spinning filament -- ******** -- things were considered.
[0047]
In this examination, both silica and barium sulfate were set and the tendency for that mixing rate to be concerned with time progress of alkali treatment as it is a quantity smaller than 0.5%, and for a crater not to be made easily that there is nothing was seen. Moreover, the tendency for the hardness of a filament to fall extremely and to go out easily if 2.0% [/ both silica and barium sulfate] is mixing exceeded was seen. Moreover, only in silica, it became opaque too much and mentioned approaching transparency too much above only with barium sulfate.
[0048]
As a result of repeating the examination which sets both silica and barium sulfate further

and is mixed after being based on these various test results, make into 0.5 to 2.0% the mixing rate which set both silica and barium sulfate, and in this sum total mixing rate the tone which has the optimal opacity after the gloss optimal as artificial hair for [hair] the inventor had hunted when the mixing rate of sulfuric acid BARYUMU is set to 0.2-0.8 0.3 to 1.2%, and dyeing in the mixing rate of silica -- ******** -- it succeeded in things.
[0049]
[Effect of the Invention]
Since according to this invention double PTT as a material, both silica and barium sulfate are set by artificial hair as an inorganic filler, it uses and grinding by alkali treatment is performed, as explained to details above Even if it has the aesthetic property of natural human hair and approximation of the appearance after dyeing, and quality and time passes, it becomes possible to offer the high artificial hair of curl maintenance nature, and its lusterless method.
[Brief Description of the Drawings]
[Drawing 1] They are PET, PTT, PBT, and the graph showing various kinds of test results about nylon 6.
[Drawing 2] It is the graph showing the change in physical properties at the time of carrying out alkali treatment of the fiber of PTT100% of 100dx24 filament.
[Explanations of letters or numerals]
1 Synthetic Resin Filament Characteristics Graph
2 Alkali Treatment Characteristics Variation Diagram Table

[Translation done.]